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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/462,631	01/11/2000	HISASHI YAMADA	Q57317	5337

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EXAMINER
PADGETT, MARIANNE L

ART UNIT	PAPER NUMBER
1762	14

DATE MAILED: 01/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

A 3-14

Office Action Summary

Application No.	Applicant(s)
09/462,631	Yamada et al
Examiner	**Group Art Unit**
M.L. Padgett	1762

—Th MAILING DATE of this communication appears on the cover sheet beneath th correspondence address—

P riod for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☒ Responsive to communication(s) filed on 11/12/02 (IDS) and 9/19/02.

☒ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-8 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-8 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☐ All ☐ Some* ☐ None of the:

☐ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____.

☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____.

Attachment(s)

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 13

☐ Interview Summary, PTO-413

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Oth r _____

Office Action Summary

1. The finality of the rejection of 2/19/08 (paper #6) is withdrawn, in order to apply references provided by applicant in the IDS of paper #13 (11/12/02). Since applicant supplied these references after ~~fielding~~ filing the Appeal Brief, even though they are new rejections, it is proper to make the action FINAL.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by the British patent to Norman C. Welsh.

Welsh teaches a spark discharge process (equivalent to electric discharge treatment), where the sparking may occur in liquids or gases, and the purpose is to supply a powder to the surface of an object to increase its hardness, etc., i.e. to make a hard coating thereon. The powder may come form the consumption of the discharge electrode, which may be formed by compacting from metal powders such as Cr, W or Ta , and a gas ~~liquid~~ or liquid carrier (or in a paste form). The carrier material may be carbonaceous material, such as wax, grease or mineral oil.

See page 2, lines 1-64; page 3, line 7-28 and 68-80; and claims 1, 3-8 and 10-11. Also note that air contains CO_2 and CH_4 components, so dry compacting in air would also have been applicable to the claims, but no particular gases are specified.

4. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Welsh alone, or in view of Magara et al or Saito et al (479).

Welsh does not say whether or not the liquid used in pastes or as dispersants or carriers for powder used to form compact electrodes, is the same as the liquid in which the sparking occurs, but the implications are that they are, since powder may also be supplied separately from the electrode to flow into the spark zone, thus like liquid/fluid would have been obvious to one of ordinary skill in the art, as expected to be employed from teachings of the alternative process.

Also, note that when the compacted powder is dry, i.e. not in a liquid carrier or paste form, then air would have been an obvious gas to be present, as no specific gases are discussed and processing in air is common. Air is a "fluid", thus a "working fluid" by the phrasing of the claims, and is a mixture of many gases commonly known to include CO_2, CO and CH_4, so has a carbon component. Since a compacted electrode will still contain some air pockets between particles and "air" is old and well now as used for a standard processing environment, or "working fluid", it would have been obvious that such electrodes and process would also read on applicants' claims as presently written.

No proportions of components or densities are given, however density of the compacting, atomic weight of the specific metal(s) and molecular weight the liquid (oil, grease, etc) employed, will determine weight percentages, where degree of compacting and proportions

would have been determined by routine experimentation to produce a suitable coherent electrode, and would reasonably have been expected to fall within ranges claimed.

Alternately, prior art references that shows discharge electrodes used to deposit material, employed in bath of liquids, such as mineral oil (kerosene) include Magara et al (col. 5, lines 10-18 and 42-55; col. 6, lines 3-12 and 48-52), or Saito et al (479) (abstract; col. 1, lines 5-12 and 29-54; and col. 2, lines 21-39); hence it would have been further obvious to one of ordinary skill in the art to employ the mineral oil as taught by Welsh in both the compacting process and as the liquid that may be used in the sparking zone, because the cited prior art secondary references, show it is conventionally used for such, providing cumulative evidence of the obviousness as discussed above for Welsh.

It is noted that the German patent to Saito et al cited in the 2/19/02 IDS has the same priority document as US PN 5,858,479, hence maybe assumed to be equivalent thereto. The point made by the German Patent office (pg. 4, lines 8-15 of the translation of their claim analysis), is well take for product claims 1-2, that immersing the green compact electrode in the carbon-containing working fluid (mineral oil) would produce via soaking, the compact green electrode with working fluid (oil) mixed therein. For the product claims, how they come to be mixed is not important, as long as structure as claims is produced. Note this concept also applies to Welsh, since it would have been obvious to one having ordinary skill that in order to have liquid in the sparking zone, immersion is a standard or common configuration that would have been expected to provide means for supply as taught in Welsh, especially in view of Magara et al or Saito et al (479), which further illustrate such practices.

5. Applicant's discussion of Vignaud (Brief, pg. 5-6), is noted, and the point about the Ag being present as a catalytic compound not a powder is relevant, in that Ex. 1 in col. 4, lines 43-50, the list of compositions for the paste to be compression molded may be considered to strongly imply compound or at least complexed form instead of Ag powder grains. The recitation of silver on col. 3, lines 4-6, while it could be taken to mean elemental silver is used (hence powder since that is what being mixed and molded), read with Ex. 1 implies otherwise. Given the information in Vignaud, or the lack of explicit discussion that might further clarify this issue, Vignaud, is withdrawn as a 102 reference over claims 1 and 3. However, applicant's arguments that Vignaud is not relevant because it relates to thin electrodes for electrochemical devices or generators, is not agreed with. While such end uses are Vignaud's preference, the reference teaches generically "an electrode is obtained having any desired shape..." (col. 2, lines 18-19+), so electrodes other than the preferred end use are not excluded.

6. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Welsh, optionally in view of Magara et al or Saito et al (479) as applied to claims 1-6 above, and further in view of Vignaud.

While Welsh teaches the compression molding of metal powders, pastes, fluid carriers that may be oil, as discussed above, there is not a detailed description of the compression molding processes, no proportions for fluids, etc. Vignaud (discussed previously, paper # 6, sections 2-4) provides such, but for a different conductive composition (col. 2, lines 1-31 and 61-col. 3, line 52; and Ex. 1). Vignaud teaches the addition of lubricant, such as liquid hydrocarbons like kerosene or oil (Rissela oil), to wet the particles and providing correct surface tension. Also, note that the lubricant can be added before or after shaping of the particle mixture

by compression. Ranges for percentage of lubricant used are not given, although the example uses about 25 wt % Rissela oil. It would have been obvious to one of ordinary skill in the art to apply the compression molding techniques taught by Vignaud to the like teachings taught by Welsh, because Welsh does not give details of how to proceed with their suggested compression molding of metal particles to make electrodes, but Vignaud does, teaching that it can be used to provide any shape electrode, hence shapes as desired by Welsh are included. The oil weight percentage provided by Ex. 1 is greater than that claimed by applicant, however the physical properties (wettability, etc.) of graphite and carbon black, Vignaud's electronic conductors, are different than Welsh's metal powders, hence one of ordinary skill in the art would have been expected to determine optimum amounts of oil to use for compression molding of compositions as applied to Welsh, keeping in mind procedural details as learned from the detailed description thereof in Vignaud. Note that Magara et al (discussed above in section 4, and in section 4 of # paper 6), shows that graphite discharge electrodes are used (in kerosene) for discharge processes employed by Welsh, thus providing a further connection between the Welsh and Vignaud references, because the materials as described in Vignaud are seen to be appropriate also for discharge electrodes, not just electrochemical ones of Vignaud's preferred end use.

7. Das et al, cited with the advisory action (paper #9) is cumulative to the above discussion, as it teaches use of pitch or a less viscous vehicle as a binder with mixtures of powdered " hard refractory metal" exemplified by TiB_2 (a metal compound so is somewhat contradictory on composition). For molding green bodies 10-30% pitch is discussed on col. 7, lines 55-66. Also see the abstract; col. 8, lines 34-37 and 53-68; and Examples on col. 10-11.

8. Claims 7-8 rejected under 35 U.S.C. 103(a) as being unpatentable over Welsh as discussed above, optionally in view of Magara e al, or Saito et al (479), Vignaud as applied to claims 1-6 above, and further in view of Koike et al.

Welsh does not discuss what is done with his electrodes after use, however, as they are consumable electrodes, their shape would inherent change with use, and one of ordinary skill in the art would recognize when the remaining electrode would no longer efficiently or effectively perform its function, but that the materials (Cr, W, Ta, etc) remaining in the electrode were still valuable and usable for the electrodes, because their form has not been changed, hence it would have been obvious to one of ordinary skill and competence, to reuse the partially consumed electrode stubs by crushing them and mixing them appropriately to form new compression molded electrodes of their original type, because it would have been economically advantage to so reuse the valuable metals, and economically hurtful to throw them out, not to mention causing waste problems that would require time and resource for tending.

Alternately, Koike et al teach reusing waste material generated from the manufacture of electrodes, or from spent electrodes, in order to enable low cost manufacturing in a compression molding process (abstract; col. 1, lines 5-10; col. 2, lines 37-65+; col. 4, lines 14-col. 5, line 9+; col. 6, line 29+; col. 7, lines 13-33+). While Koike et al is using different conductive materials than Welsh, they are analogously making their electrodes of powdered materials; and using organic liquids and binders in their mixtures which they compression mold. It would have been obvious to one of ordinary skill that the concept of using crushed materials from spent electrodes in the manufacture of new electrodes, would have been applicable to Welsh electrode process,

because the compression molding processing and results are analogous, and the economic advantages are equally applicable, and advantageous.

9. Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. L. Padgett whose telephone number is (703) 308-2333. The examiner can normally be reached on Monday-Friday from about 8:00 am-4:30 pm.

The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9310 for regular communications; 703-872-9311 for After Final communications, and (703) 305-6078 for informal communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0661.

Examiner Padgett/ng 01/06/03 &10/15/03
January 16, 2003

MARIANNE PADGETT
PRIMARY EXAMINER